

Serial No. 09/764,311

Docket No. P-182

Amdt. dated March 22, 2004

Reply to Office Action of December 22, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for motion compensation adaptive image processing, which processes an image data received from a external source, stores the processed image data and restores the stored data to the received image data, ~~the method comprising the steps of comprising:~~

Q 2

~~dividing analyzing~~ the received image data into ~~at least one image data having~~ relatively high frequency component and ~~at least one~~ relatively low frequency component;

compressing/coding the image data having ~~the~~ relatively high frequency component and relatively low frequency component by allocating predetermined bits[], ~~said~~ compressing/coding including coding the ~~dividing the compressed/coded image data into a value corresponding~~ relatively high frequency component ~~independently from the and a value corresponding to~~ relatively low frequency component; and

decoding the ~~coded image data values~~ and restoring the received image data based on the decoded image data.

Amtd. dated March 22, 2004

Reply to Office Action of December 22, 2003

2. (Currently Amended) The method of claim 1, wherein the image data is divided
~~analyzed~~ into the relatively high and low frequency components by Wavelet Transform.

a²
3. (Currently Amended) The method of claim 1, wherein the image data having
relatively low frequency component is analyzed divided repeatedly into image data having
relatively higher and lower frequency components of which frequencies are lower than that of
the image data ~~to be analyzed~~ previously divided.

4. (Currently Amended) The method of claim 1, wherein the ~~analyzing~~ dividing step
comprises high pass and low pass filtering image data and downsampling the high and low pass
filtering image data.

5. (Currently Amended) The method of claim 1, wherein the compressing/coding
step further comprises a step of outputting:
a first code corresponding to a lower value ~~corresponding to the analyzed image~~
~~data having of~~ the relatively low frequency component; and

a second code obtained by coding ~~the a~~ result of subtracting the lower value from a higher value ~~corresponding to the analyzed image data having of~~ the relatively ~~high~~ ~~low~~ frequency component.

Q 2
6. (Original) The method of claim 1, wherein the compressing/coding step further comprises a step of storing the compressed/coded image data.

7. (Currently Amended) The method of claim 1, wherein the restored image data is obtained by repeatedly performing ~~the decoding the values for~~ as many times as the number of coding was performed for the analyzed divided image data.

8. (Currently Amended) The method of claim 1, wherein the decoding/restoring step further comprises a step of outputting a first representative value from a coding table ~~code~~ corresponding to a ~~lower~~ higher value ~~corresponding to the compressed/coded image data~~ ~~having of~~ the relatively low frequency component and a second ~~code~~ representative value from a coding table ~~obtained by coding the result of adding the lower value from a higher value~~ corresponding to the ~~compressed/coded image data having the relatively high frequency component~~.

Am dt. dated March 22, 2004

Reply to Office Action of December 22, 2003

9. (Original) The method of claim 1, wherein the compressing/coding step compresses and codes the image data of sub-blocks (4 x 1 pel, 32bits) as 24 bits data by coding the image data as following methods of: 1) dividing the sub-blocks into two image data having high frequency components and low frequency components by Wavelet Transform, then coding two image data having two high frequency components by allocating five bits, respectively; 2) coding the first one of the two image data having the low frequency components as eight bits data; and 3) coding the second one of the two image data having the low frequency components as six bits data.

10. (Currently Amended) An apparatus for motion compensation adaptive image processing, which processes an image data received from an external source, stores the processed image data and restores the stored data to the received image data, the apparatus comprises:

an image frame processing unit for processing the received image data as frame unit and outputting the processing image data and a motion vector signal;

an image compensating unit for generating a motion compensation information, to compensate the received image data based the motion vector signal and outputting it to the image frame processing unit;

Amtd. dated March 22, 2004

Reply to Office Action of December 22, 2003

an image compressing unit for analyzing dividing the image data having into one or more relatively high frequency components and image data having one or more relatively low frequency components, allocating [a] predetermined bits ~~into~~ the analyzed divided image data, and compressing/coding ~~the image data including the allocated bits~~ the relatively high frequency components independently from the relatively low frequency components;

Q 2
a storing unit for compressing/coding storing the compressed/coded image data;
and

an image restoring unit for decoding the stored compressed/coded image data and restoring the received image data based on the decoded image data.

11. (Currently Amended) The apparatus of claim 10, wherein the image compressing unit comprises:

a filtering unit for filtering the image data received from the image frame processing unit and analyzing image data having outputting the high frequency components and low frequency components based on the filtering image data;

a high frequency coding unit for coding the image data having high frequency components using a coding table; and

a low frequency coding unit for coding the image data having low frequency components using a coding table.

12. (Original) The apparatus of claim 11, wherein the high frequency coding unit outputs a code corresponding to a value in the coding table, which indexes the image data having high frequency component.

*A*²
13. (Original) The apparatus of claim 11, wherein the high frequency coding unit outputs a code corresponding to a value indexing a range if the high frequency component is in the range.

14. (Currently Amended) The apparatus of claim 11, wherein the low frequency coding unit outputs a first code corresponding to a first ~~one of the image data having~~ low frequency components and a second code corresponding to a value indexing a result of subtracting the first low frequency component ~~one~~ from a ~~previous image data~~ second low frequency component using the coding table

15. (Original) The apparatus of claim 10, wherein the image restoring unit comprises: filtering unit for dividing the image data stored in the storing unit into the image data having high frequency components and low frequency components; and

Am dt. dated March 22, 2004

Reply to Office Action of December 22, 2003

decoding unit for decoding the image data having high frequency components and the image data having low frequency components using coding table.

16. (Original) The apparatus of claim 15, wherein the decoding unit outputs representative value indexing the image data having high frequency components stored in the storing unit using the coding table, a first value of the image data having first low frequency components as it is, and a value that the first value is added to a second value coded for the image data having second low frequency components according to the coding table.

17. (Original) The apparatus of claim 10, wherein the image frame processing unit comprises:

variable length coding unit for receiving the image data and coding the received image data to have variable length;

dequantizing unit for dequantizing the variable length coding image data;

inverse transform unit for inverse discrete cosine transforming the variable length coded image data; and

frame processing unit for processing the inverse discrete cosine transformed image data based on the motion compensation information and outputting the processed image data as a frame unit.

Amtd. dated March 22, 2004

Reply to Office Action of December 22, 2003

18. (Original) The apparatus of claim 10, wherein the image compressing unit comprises:

filtering unit for filtering the received image data having subblocks and analyzing the filtered data into image data having high frequency components and image data having low frequency components;

a² first coding table for mapping a value of the image data having high frequency components into a index having a range and outputting a code generated after compressing/coding the image data;

subtracting unit for subtracting the image data having the a low frequency components from the image data having a second low frequency components; and

second coding table for mapping the subtracting value into a index having a range and outputting a code coding the image data having low frequency components.

19. (Original) The apparatus of claim 10, wherein the image restoring unit comprises: first decoding table for outputting representative value indexing the image data having high frequency components stored in the storing unit using the coding table;

adding unit for adding a value of the image data having a first low frequency components, and a value of the image data-having a second low frequency components; and

second decoding table for outputting a representative value indexing a code corresponding to the image data having the second low frequency components.

20. (New) The method of claim 8, further comprising:

adding the first representative value to a lower value of the relatively low frequency component; and

restoring the received image data based on the first and second representative values.

21. (New) An image processing method, comprising:

dividing received image data into high and low frequency components;

allocating predetermined bits to the high and low frequency components; and

coding the high frequency components independently from the low frequency

components to generate compressed image data.

22. (New) The method of claim 21, wherein the coding step includes:

using different coding tables to code the high frequency components and the low frequency components.

23. (New) The method of claim 22, wherein the coding step includes:

outputting an indexed range value from a first coding table corresponding to the high frequency band components;

Amtd. dated March 22, 2004

Reply to Office Action of December 22, 2003

subtracting first low frequency components from second low frequency components to generate a difference value; and

outputting an indexed range value from a second coding table corresponding to the difference value.

Q2
24. (New) The method of claim 23, wherein the compressed image data is formed from the index range value from the first coding table, the index range value from the second coding table, and the first low frequency components.

25. (New) The method of claim 21, further comprising:
storing the compressed image data in a storage unit.

26. (New) The method of claim 25, further comprising:
decoding the compressed image data into high and low frequency components;
restoring the received image data from the decoded data, wherein the low and high frequency components are decoded independently from one another.

27. (New) The method of claim 26, wherein decoding the compressed image data includes:

Amtd. dated March 22, 2004

Reply to Office Action of December 22, 2003

outputting an indexed representative value from a first decoding table for the high frequency components;

Q² outputting an indexed representative value from a second decoding table for first low frequency components; and

adding the indexed representative value from the second decoding table and second low frequency components to generate summed data.

28. (New) The method of claim 27, wherein received image data is restored based on the indexed representative value from the first decoding table, the indexed representative value from the second coding table, and the second low frequency components.